

Claims

- 2 1. A method for identifying a compound which is capable of inhibiting a
3 pathogen in a eukaryotic organism, said method comprising
4 (a) exposing at least two different eukaryotic organisms, at least one of
5 said organisms being a non-rodent, to a single pathogen in the presence of at least one
6 candidate compound; and
7 (b) identifying a compound that inhibits said pathogen in each of said
8 eukaryotic organisms.

1 2. The method of claim 1, wherein said pathogen is a bacterium.

1 3. The method of claim 2, wherein said bacterium is *Pseudomonas*
2 *aeruginosa*.

1 4. The method of claim 2, wherein said bacterium is *Pseudomonas*
2 *aeruginosa* UCBPP-PA14.

1 5. The method of claim 1, wherein said eukaryotic organisms includes a
2 vertebrate and a plant.

1 6. The method of claim 1, wherein said eukaryotic organism includes a
2 vertebrate and an invertebrate.

1 7. The method of claim 1, wherein said eukaryotic organism includes a plant

1 and an invertebrate.

1 8. The method of claim 5 or claim 6, wherein said vertebrate is a mammal.

1 9. The method of claim 6 or claim 7, wherein said invertebrate is a nematode.

1 10. The method of claim 9, wherein said nematode is a member of the genus
2 *Caenorhabditis*.

1 11. The method of claim 5 or claim 7, wherein said plant is a member of the
2 genus *Arabidopsis*.

1 12. The method of claim 1, wherein each of said eukaryotic organisms is a
2 plant.

1 13. The method of claim 1, wherein each of said eukaryotic organisms is a
2 vertebrate.

1 14. The method of claim 1, wherein each of said eukaryotic organisms is an
2 invertebrate.

1 15. The method of claim 14, wherein said invertebrate is an insect.

1 16. The method of claim 15, wherein said insect is a lepidopteran.

1 17. The method of claim 16, wherein said lepidopteran is *Galleria* or *Plutella*.

- 1 18. The method of claim 14, wherein said insect is a dipteran.
- 1 19. The method of claim 19, wherein said dipteran is *Drosophila*.
- 1 20. The method of claim 1, wherein said method utilizes the nematode fast
2 killing assay.
- 1 21. The method of claim 20, wherein said nematode fast killing assay involves
2 the use of a *C. elegans* having a P-glycoprotein mutation.
- 1 22. A method for identifying a compound which is capable of inhibiting a
2 pathogen in a non-rodent eukaryotic host organism, comprising
3 (a) exposing said a non-rodent eukaryotic host organism to a single pathogen in
4 the presence of at least one candidate compound; and
5 (b) identifying a compound that inhibits the pathogen in said eukaryotic host
6 organism.
- 1 23. The method of claim 22, wherein said pathogen is a bacterium.
- 1 24. The method of claim 23, wherein said bacterium is *Pseudomonas*
2 *aeruginosa* UCBPP-PA14.
- 1 25. The method of ~~claim~~ 22, wherein said non-rodent eukaryotic host
2 organism is a nematode.
- 1 26. The method of ~~claim~~ 25, wherein said nematode is *Caenorhabditis*
2 *elegans*.

1 27. The method of ~~claim 25~~, wherein said non-rodent eukaryotic organism is a
2 plant.

28. The method of ~~claim 27~~, wherein said plant is *Arabidopsis*.

1 29. The method of claim 22, wherein said method utilizes the nematode fast
2 killing assay.

1 30. The method of claim 29, wherein said nematode fast killing assay involves
2 the use of a *C. elegans* having a P-glycoprotein mutation.

1 31. A method for identifying a pathogenic virulence factor, comprising

2 (a) identifying a pathogen which is capable of infecting at least two different
3 eukaryotic organisms, at least one of said organisms being a non-rodent;

4 (b) generating a mutant of said pathogen;

5 (c) exposing each of said organisms to said mutated pathogen;

6 (d) determining whether said mutated pathogen is capable of causing disease in
7 each of said organisms, a reduction of disease in both of said organisms relative to that
8 caused by said wild-type pathogen indicating a mutation in said pathogenic virulence factor;
9 and

10 (e) using said mutation as a marker for identifying said pathogenic virulence
11 factor.

1 32. A method for mutating a pathogenic virulence factor, comprising

2 (a) identifying a pathogen which is capable of infecting at least two different
3 eukaryotic organisms, at least one of said organisms being a non-rodent;

- 1 (b) generating a mutant of said pathogen;
- 2 (c) exposing each of said organisms to said mutated pathogen; and
- 3 (d) determining whether said mutated pathogen is capable of causing disease in
- 4 each of said organisms, a reduction of disease in both of said organisms relative to that
- 5 caused by said wild-type pathogen indicating a mutation in said pathogenic virulence factor.

- 1 33. A method of reducing the virulence of a pathogen, comprising
- 2 (a) identifying a pathogen which is capable of infecting at least two different
- 3 eukaryotic organisms, at least one of said organisms being a non-rodent;
- 4 (b) generating a mutant of said pathogen;
- 5 (c) exposing each of said organisms to said mutated pathogen; and
- 6 (d) determining whether said mutated pathogen is capable of causing disease in
- 7 each of said organisms, a reduction of disease in both of said organisms relative to that
- 8 caused by said wild-type pathogen indicating a reduction in said pathogen virulence.

- 1 34. A method for identifying a pathogenic virulence factor, comprising
- 2 (a) selecting a pathogen which is capable of infecting an insect;
- 3 (b) generating a mutant of said pathogen;
- 4 (c) exposing said insect to said mutated pathogen; and
- 5 (d) determining whether said mutated pathogen is capable of causing
- 6 disease on said insect, a reduction of disease on said insect relative to that caused by said
- 7 wild-type pathogen indicating a mutation in said pathogenic virulence factor.

- 1 35. The method of claim 34, wherein identification of said mutation is used as a
- 2 marker for identifying said pathogenic virulence factor.

- 1 36. The method of claim 34, wherein said insect is a moth or a fly.

- 1 37. The method of claim 34, wherein said pathogen is a bacterium.
- 1 38. The method of claim 37, wherein said bacterium is a member of the genus
2 *Pseudomonas*.
- 1 39. The method of claim 34, wherein said pathogen is a fungus.
- 1 40. The method of claim 39, wherein said fungus is a member of the genus
2 *Fusarium*.
- 1 41. The method of claim 34, further comprising calculating an LD₅₀ of a
2 pathogen.
- 1 42. The method of claim 34, further comprising testing said mutated pathogen
2 in a mouse mortality assay.
- 1 43. The method of claim 36, wherein said moth is *Galleria mellonella*.
- 1 44. The method of claim 36, wherein said moth is *Plutella xylostella*.
- 1 45. The method of claim 36, wherein said fly is *Drosophila melanogaster*.